

CLAIMS

1. A method of providing closed-loop capacity scheduling between a base station and a mobile station, comprising the steps of:

5 inputting respective flows to capacity controllers (FCC) in the mobile station;

selecting a traffic class from a plurality of QoS traffic classes; and
allocating priority levels to the respective flows in consideration of the selected traffic class in order to transmit different QoS traffic classes.

10 2. The method as claimed in claim 1, further comprising the step in which the FCCs in the mobile station compute uplink capacity requests for the respective flows based on the selected traffic class.

3. The method as claimed in claim 2, further comprising the steps in which:

15 a capacity request controller (CRC) changes the capacity request for each of the flows with the use of the priority level, the selected traffic class, and the uplink transmission power; and

the changed capacity request for each of the flows is transmitted from the mobile station to the base station.

20 4. The method as claimed in claim 3, further comprising the steps in which:

the base station receives the changed capacity request;

a capacity scheduler (CS) of the base station computes an allowable capacity for each of the flows with the use of the changed capacity request; and

25 capacity allocation indicating the allowable capacity for each of the flows is transmitted from the base station to the mobile station.

5. The method as claimed in claim 3, further comprising the steps in which:

the base station receives the changed capacity request;

the CS of the base station computes an allowable capacity for each of the flows with the use of the changed capacity request;

a total value of the allowable capacities for the flows (the total allowable capacity) is computed for each of the mobile stations; and

capacity allocation indicating the total allowable capacity for each of the mobile station is transmitted from the base station to the mobile station.

6. The method as claimed in claim 4, further comprising the steps in which:

10 a capacity allocation controller (CAC) in the mobile station receives the capacity allocation;

the capacity allocation received by the CAC is changed with the use of the selected traffic class and the uplink transmission power to generate a changed allocated capacity; and

15 each of the FCCs updates the allowable capacity with the use of the changed allocated capacity.

7. The method as claimed in claim 5, further comprising the steps in which:

a transport format combination controller (TFCC) in the mobile station receives the capacity allocations,

the TFCC selects a combination of transport formats according to the capacity allocations; and

each of the FCC computes a capacity request for each flow according to the selected combination of transport formats.

25 8. A system for providing closed-loop capacity scheduling between a mobile station and a base station, capable of selecting a QoS traffic class from a plurality of QoS traffic classes, the system comprising:

a flow capacity controller (FCC) for computing a requested uplink

capacity for each data flow specified by a selected QoS traffic class;

a capacity request controller (CRC) for changing the requested uplink capacity so as to generate a changed capacity request indicating a changed capacity; and

5 means for transmitting the changed capacity request from the mobile station to the base station.

9. The system as claimed in claim 8, wherein the mobile station further comprises:

a capacity allocation controller (CAC) changing the allocated capacity
10 transmitted from the base station based on an uplink transmission power; and
an FCC for updating the allowed capacity with the use of the changed allocated capacity.

10. The system as claimed in claim 8, wherein the mobile station further comprises:

a TFCC for selecting a combination of transport formats according to the
15 capacity allocation transmitted from the base station; and
an FCC for computing a capacity request for each of the flows with the use of the selected combination of transport formats.

11. The system as claimed in claim 8 or 9, wherein the base station
20 comprises:

reception means for receiving the changed capacity request; and
a capacity scheduler for computing an allowable capacity for each of the flows with the use of the changed capacity request, the selected traffic class, and the priority level transmitted from the mobile station.

12. A method of managing uplink capacities for a plurality of uplink
25 data flows in a base station, the method comprising the steps of:
computing a schedulable uplink capacity indicating a difference between a maximum uplink capacity and a non-schedulable uplink capacity;

receiving a capacity request transmitted from the mobile station;
 computing a minimum QoS capacity that satisfies a minimum QoS
 request; and

5 allocating a capacity to each of the flows in consideration of the priority
 level and the minimum QoS capacity allocated to the flow.

13. The method as claimed in claim 12, further comprising the steps
 of:

10 computing an additional requested capacity to each of the flows so that
 the available and schedulable uplink capacity that remains after the allocation of
 the minimum QoS capacity is utilized to the maximum extent possible; and

allocating the remaining capacity to each of the flows having the
 additional requested capacities.